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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,512	11/30/2001	Minquan Cheng	2001B111	6517

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EXXONMOBIL CHEMICAL COMPANY  
P O BOX 2149  
BAYTOWN, TX 77522-2149

EXAMINER

NGUYEN, TAM M

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 03/27/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/998,512

Applicant(s)

CHENG ET AL.

Examiner

Tam M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)              | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other:  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-11, drawn to a process for separating oxygenated hydrocarbon from an olefin composition, classified in class 585, subclass 640+.
- II. Claims 12-15, drawn to a hydrocarbon composition, classified in class 568, subclass, 700+.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process such as a process for mixing oxygenated hydrocarbons (e.g., alcohol, ether, and aldehyde) with water.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Jaimes Sher on January 10, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-11. Affirmation

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of this election must be made by applicant in replying to this Office action. Claims 12-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Drawings***

The drawing is objected to because line 24 is missing from the figure. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsia et al. (4,506,106) in view of Kuechler et al. (6,137,022)

Hsia discloses a process for converting an oxygenated hydrocarbon including methanol (MeOH), dimethylether (DME), or the like to produce olefins by contacting the oxygenated hydrocarbon with a catalyst to form an olefin composition comprising water and oxygenated hydrocarbon (e.g., methanol and DME) and cooling and separating the olefin composition into an olefin containing vapor stream and water containing stream. The vapor stream is then compressed and separated into an olefin product and an oxygenated hydrocarbon stream which is then combined with the water containing stream to produce a combined stream which is then passed into a separation zone to recover an oxygenated hydrocarbon product. (See col. 2, lines 8-24; col. 3, line 48 through col. 4, line 63; Table I; col. 5, lines 39-68; col. 6, lines 10-43; figure 2)

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## Claim 1:

Hsia does not disclose that the catalyst is a molecular sieve catalyst. However, Kuechler discloses a method of making an olefin product from an oxygenate feedstock (MTO process) by contacting the feedstock with a molecular sieve catalyst (see abstract; col. 1, line 62 though col. 2, line 17). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by using the molecular sieve catalyst as taught by Kuechler because the Kuechler catalyst is effective to convert oxygenated hydrocarbons to olefins.

## Claim 1:

Hsia does not disclose that the water containing stream comprises at least 1 wt.% oxygenated hydrocarbon. However, the water containing stream of Hsia contains water and oxygenated hydrocarbon (unreacted feedstock) (see figure 2; col. 4, lines 38-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by operating separator 16 at conditions to produce a water containing stream which contains at least 1 wt. % of oxygenated hydrocarbon (e.g., methanol) because Hsia desires to remove water and all of the unreacted feedstock from the olefin product and it would be expected that the results would be the same or similar when producing a water containing stream comprising at least 1 wt.% of oxygenated hydrocarbon because all of the unreacted feedstock in the water containing stream will be removed in the oxygenated stripper.

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Claim 2:

Hsia does not disclose a step for recovery a propylene containing stream. However, Hsia teaches the steps for recovery an ethylene (also known as ethene) stream and a  $C_{3+}$  stream (See figure 1; col. 5, lines 26-33). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by separating propylene from the  $C_{3+}$  stream because one of skill in the art would separate propylene from the  $C_{3+}$  stream if propylene is the most desirable product in the  $C_{3+}$  stream.

Claims 3 and 4:

Hsia does not disclose a step of polymerizing the ethylene and propylene containing streams. However, Kuechler teaches that olefin products, which are obtained from a MTO process, can be polymerized (see col. 4, lines 61-65). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by polymerizing the ethylene and propylene containing streams as taught by Kuechler because the polymerizing step is known in the art and one of skill in the art would polymerize the ethylene and propylene containing streams if one desires to produce polymer products of ethylene and propylene.

Claim 5:

The water containing stream and the oxygenated hydrocarbon containing stream are first combined and then separated in a separator (oxygenated stripper). (See Hsia's figure 2)

Claim 6:

Hsia does not disclose that the water containing stream and the oxygenated hydrocarbon containing stream are both combined and separated within a separator. However, water is

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separated from oxygenated hydrocarbons in the stripper (see Hsia's figure 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by combining and separating the streams within a separator because it would be expected that the results would be the same or similar when either (1) combining the streams within a separator or (2) combining the streams and then separating in a separator because in both cases both water is separated from the oxygenated hydrocarbons. If the two streams are mixed within a separator in the process of Hsia, one of skill in the art might use a different separator (e.g., distillation, adsorption, or stripper) which is to be effective to separate water from oxygenated hydrocarbons.

Claim 7:

The vapor stream is compressed at 310 psig (see col. 6, lines 10-11).

Claims 8-10:

Hsia does not disclose that the oxygenated hydrocarbon product contains not greater than 50, 40, 30, or 25 wt. % of water. However, Hsia desires to employ a feedstock which may comprise about 4 to 17 % water. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by producing an oxygenated hydrocarbon product comprising the claimed amount of water because the oxygenated hydrocarbon product would be combined with the methanol feedstock and Hsia desires a combined feedstock comprising a small amount of water (see col. 3, lines 66-67; col. 4, lines 19-24). Therefore, it would be effective to produce an oxygenated hydrocarbon product containing the claimed amount of water.



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***Conclusion***

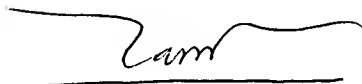
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (703) 305-7715. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-5408 for regular communications and (703) 305-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tam M. Nguyen  
Examiner  
Art Unit 1764

Tam Nguyen/ TN  
March 19, 2003

A handwritten signature in black ink, appearing to read 'Tam', is written over a horizontal line.